

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT			1. CONTRACT ID CODE	PAGE OF PAGES
			1 of 3	
2. AMENDMENT/MODIFICATION NO. <div style="text-align: center;">9</div>	3. EFFECTIVE DATE <div style="text-align: center;">1-Mar-2002</div>	4. REQUISITION/PURCHASEREQ. NO.	5. PROJECT NO. (If applicable)	
SUEE BY JS Army Corps of Engineers, Kansas City District 760 Federal Building, 601 East 12th Street Kansas City, Missouri 64106-2896		7. ADMINISTERED BY (If other than item 6)		
8. NAME AND ADDRESS OF CONTRACTOR <small>(No., street, county, State and ZIP Code)</small>			9a. AMENDMENT OF SOLICITATION NO. <input checked="" type="checkbox"/> DACW41-02-B-0001 9b. DATED (SEE ITEM 11) 12/22/2001 10a. MODIFICATION OF CONTRACT/ORDER NO. 10b. DATED (SEE ITEM 13)	
CODE FACILITY CODE				
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS				
<input checked="" type="checkbox"/> The above number solicitation is amended as set forth in item 14. The hour and date specified for receipt of Offers <input type="checkbox"/> is extended, <input checked="" type="checkbox"/> is not extended.				
<small>Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegraph which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.</small>				
12. ACCOUNTING AND APPROPRIATION DATA (If required)				
13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.				
<input checked="" type="checkbox"/> A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: <small>(Specify authority)</small> THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.				
B. THE ABOVE NUMBER CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES <small>(such as changes in paying office, appropriation date, etc.)</small> SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF:				
C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:				
D. OTHER <small>(Specify type of modification and authority)</small>				
E. IMPORTANT: Contractor <input type="checkbox"/> is not, <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.				
14. DESCRIPTION OF AMENDMENT/MODIFICATION <small>(Organized by UCF section headings, including solicitation/contract subject matter where feasible.)</small> <div style="text-align: center;"> Missouri River Levee System, Levee Unit L-385 Phase I - Quindaro Levees and Stop Log Gap, Phase II - Quindaro-Riverside Levees and Structures The Solicitation is amended in accordance with the attached pages. </div>				
<small>Except as provided herein, all terms and conditions of the document referenced in item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.</small>				
15a. NAME AND TITLE OF SIGNER <small>(Type or print)</small>		16a. NAME AND TITLE OF CONTRACTING OFFICER <small>(Type or print)</small>		
15b. CONTRACTOR/OFFEROR		15c. DATE SIGNED		16b. UNITED STATES OF AMERICA
(Signature of person authorized to sign)		BY		16c. DATE SIGNED
		(Signature of Contracting Officer)		

The SOLICITATION is amended as follows:

1. SPECIFICATIONS:

- a. Revised Sections: The following sections have been deleted and replaced with revised sections of the same numbers. Copies of the revised pages are attached.

Phase II

02331

- b. Revised Pages, Phase II: Pages 02101-10 thru 02101-12 are deleted and replaced with revised pages of the same numbers. Copies of the revised pages are attached.

2. DRAWINGS:

- a. Revised Drawings: The following drawings are deleted and replaced with revised drawings of the same numbers. Copies of the revised drawings are attached.

Phase I

Sheet A-1

Phase II

Sheet A-1
Sheet S21A
Sheet S89
Sheet S90

- b. Clarifications: The following deletions of drawings were inadvertently omitted from the lists of changes for Phase II.

Deleted Drawings:

Sheet S80D
Sheet S80E
Sheet S80F
Sheet S80G
Sheet S071
Sheet C36E

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- c. Clarifications: The following new drawings were inadvertently listed as changed drawings on the lists of changes for Phase II.

New Drawings:

Sheet C09B
Sheet C09C
Sheet C09D
Sheet C10C
Sheet C82A
Sheet C82B
Sheet C82C
Sheet C300
Sheet C301
Sheet C303
Sheet C304
Sheet C305
Sheet C307
Sheet C308
Sheet C309
Sheet C310
Sheet C311
Sheet C313
Sheet C314

3. Bidders are required to acknowledge receipt of this amendment on the Bidding Form, in the space provided, or by separate letter or telegram prior to opening of bids. Failure to acknowledge all amendments may cause rejection of the bid.

4. Bids will be received until 12:00 p.m., local time, 18 March 2002, in Room 760 Federal Building, 601 East 12th Street, Kansas City, Missouri 64106-2896, or delivered to the Kansas City District Corps of Engineers Bid-Opening Officer between 12:00 p.m. and 2:00 p.m., local time, 18 March 2002, at the Riverside City Hall Board of Alderman Chamber located at 2950 Northwest Vivion Road, Riverside, Missouri 64150, and at 2:00 p.m. will be publicly opened.

Encls

1. Spec pgs as listed
2. Drawings as listed

The sequence of construction carried out for the various closure structures shall be as follows:

- a. Complete construction of levee to full height in the vicinity of the closure monoliths a minimum of 45 days prior to installation of auger cast piles for the closure, storage, and associated floodwall monoliths.
- b. Construct closure, storage, and associated floodwall monoliths in accordance with staging sequences as shown on the drawings and outlined hereinafter.
- c. Construct I-wall transitions.

3.9 SCHEDULE OF WORK AT THE CLOSURE STRUCTURES (Q1 AND Q3) ON RAILROAD RIGHT-OF-WAY

3.9.1 General

Burlington Northern Railroad will provide flagmen and protective services and devices as required for the protection of railroad traffic and operations during the performance of the work by the Railroad and the Contractor. Burlington Northern Railroad will be responsible for the removal and installation of temporary and permanent track work and the installation of a crossing at Q1.

3.10 Plans of Operations

Construction shall be performed in accordance with approved detailed plans of operations submitted by the Contractor for each of the two locations: Closure gaps Q1 and Q3. Duplicate copies of the detailed plans of operations shall be submitted to the railroad company and to the COR a minimum of 45 days in advance of the commencement of work. The designs of all temporary sheet pile shoring shall be submitted with the Plan of Operations.

3.11 PROTECTIVE SERVICES

The Contractor shall reimburse Burlington Northern Railroad and Intercontinental Corporation for providing any protective services, including flagmen and devices which may be required for protection of railroad traffic and operations due to operations of the Contractor. Upon completion of the work in the areas where protective services are required, the Government shall be furnished itemized invoices showing the actual costs billed to and paid by the Contractor in full for protective services. The Government will adjust the contract lump sum price for "Protective Services" under clause CHANGES of the CONTRACT CLAUSES to the actual total amount paid by the Contractor under this item.

3.12 Q0 CLOSURE GAP STAGING

The work shall be performed as shown.

3.13 Q1 and Q3 CLOSURE GAP STAGING AND CONSTRUCTION REQUIREMENTS

The work on Q1 shall be performed as shown. Details of sheet pile shoring are shown on drawing S21A for information and for requirements by BNSF (See Note 2.) The Contractor is responsible for the design of the temporary sheet pile shoring.

The work at Q3 shall be performed as shown. Use the sheet pile shoring requirements in accordance with Note 2 on Drawing S21A. The Contractor is responsible for the design of the temporary sheet pile shoring.

The Contractor shall coordinate with Intercontinental and Burlington Northern Santa Fe Railroad and establish a construction schedule six months in advance of Q1 and Q3 construction. Q1 and Q3 construction will be done concurrently to minimize disruption to the Railroad. The Contractor shall submit the proposed schedule to the contracting officer's representative (COR) for review and approval prior to Q1 and Q3 construction. The Contractor shall accommodate minor adjustments of approximately one week to the established commencement of the construction schedule if required by the Intercontinental shipping schedule.

The contractor shall notify all owners of spur lines, between Q1 and Q3 structures, of the scheduled single track operation six months in advance of Q1 and Q3 construction.

To complete the construction of the Q1 closure gap, the Intercontinental spur line shall be temporarily out of service for a duration not to exceed ten weeks.

To permit the construction of the Q1 and Q3 closure gaps, Burlington Northern Santa Fe Railroad will operate on a single live track as shown for a duration not to exceed four weeks. If the Contractor exceeds the four week allowance for single live track operations, he shall be responsible for all liquidated damages in accordance with Section 00800. For inclement weather allowances, see Section 01100, 1.8(d).

The Contractor shall comply with the safety manual and program administered by the Burlington Northern Santa Fe Railroad.

As used in this Section, "Owner" includes Burlington Northern Santa Fe Railroad and other railroad companies using BNSF property at or near the location of the Project and their officers, agents and employees. "Loss" includes loss, damage, claims, demands, actions, causes of action, penalties, costs, and expenses of whatsoever nature, including court costs and attorney's fees, that may result from: injury to or death of persons whomsoever (including, the Owner's officers, agents, and employees, the Levee District's officers, agents, and employees, as well as any other person); and damage to or loss or destruction of property whatsoever (including damage to the roadbed, tracks, equipment, or other property of the Owner, or property in its care or custody).

It is understood that the safety and continuity of the Owner's railroad operations are of the utmost importance and, so that such operations shall be adequately safeguarded, the Contractor, in the performance or work related to the Project or any time thereafter in the construction, shall not obstruct, interfere with, or delay the maintenance or operations of Railroad Facilities without the prior written approval of

the Owner. The Contractor shall exercise like precaution and will diligently supervise its own work and that of its contractors to the end of all work carried on in proximity to the Owner's existing or relocated Railroad Facilities and shall not obstruct, interfere with, or delay the operations of the Owner. The Contractor shall notify the Owner in advance, prior to performing work on or adjacent to the Owner's existing and relocated right-of-way and tracks, so as to enable the Owner to furnish flagging and such protective services at the Owner deems necessary to ensure the safety of its railroad operations.

The Contractor shall provide the Owner with a Railroad Protective Insurance Policy in the amount of \$2,000,000 for any Work, at any time, that occurs on the Owner's property or within 50 feet of the railroad tracks. Should such damage result in disruption of the Owner's facilities, the Owner shall have the right to make immediate repairs and the Contractor shall be obligated to compensate the Owner the actual cost of said repairs together with actual loss resulting therefrom. The Government shall assume no liability for damages to persons, property, or any other liability that is paid to Owner by insurance carried by any Government contractor. The existence or the non-existence of insurance shall not limit the Contractor's liability.

The Contractor shall obtain and maintain, at its own expense, and shall require its subcontractors to obtain and maintain in force during construction the following insurance:

1. Commercial General Liability Insurance, to include contractual liability products/completed operations, against claims arising out of bodily injury, illness and death and from damage to or destruction of property of others, including loss or use thereof, including liability of the Owner, Contractor, and all subcontractors, and each of them with minimum limits for bodily injury and property damage of \$2,000,000 for each occurrence with an aggregate of \$6,000,000. This policy shall contain a "Waiver of Transfer Right endorsement to waive any right of recovery that the insurance company may have against the Owner because of payments made for bodily injuries or property damage.
2. Business Automobile Policy Insurance, including owned, non-owned and hired vehicles with minimum limits for bodily injury and property damage of \$1,000,000 per occurrence on vehicles used on railroad property.
3. Workers' Compensation Insurance or coverage as required under the Workers' Compensation Act of the State of Missouri. The policy shall include occupational disease to require statutory limits, employer's liability of \$1,000,000 to include FELA, if appropriate, and "all states" endorsement.

The Owner shall be a named additional insured under the above liability policies.

4. In addition to the insurance requirements of 1-3 above, the Contractor will be required to furnish the Owner a Railroad Protective Liability Insurance policy issued in the name of the Owner with a limit of Two Million Dollars (\$2,000,000) for bodily injury and property

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PHASE II

02331

LEVEE CONSTRUCTION AND EARTHWORK
03/02

PART 1 GENERAL

1.1 SCOPE

The work covered by this section consists of furnishing all submittals, labor, equipment, plant, materials, and all efforts necessary to perform levee construction and general earthwork as defined for this project. In regard to earthwork whether it is excavation; handling; placement; work beneath, adjacent, or above a pipe; work beneath, adjacent, or above a structure; or earthwork in general, this section shall govern if there is disagreement with or between specification sections or plan sheets.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced or where the procedure or information is necessary for performance of the work. The publications are referred to in the text by basic designation only.

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
(AASHTO)

AASHTO M 33 (1988; R 1995) Sizes of Aggregate for Road and Bridge Construction

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 33 (1999) Concrete Aggregates

ASTM D 422 (1963; R 1998) Particle-Size Analysis of Soils

ASTM D 698 (1991; R 1998) Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/cu. ft. (600 kN-m/cu. m.))

ASTM D 1140 (1997) Amount of Material in Soils Finer than the No. 200 (75-micrometer) Sieve

ASTM D 1556 (1990; R 1996) Density and Unit Weight of Soil in Place by the Sand-Cone Method

ASTM D 2167 (1994) Density and Unit Weight of Soil in Place by the Rubber Balloon Method

ASTM D 2216 (1998) Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

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ASTM D 2487	(1998) Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D 2922	(1996) Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
ASTM D 2937	(1994) Density of Soil in Place by the Drive-Cylinder Method
ASTM D 3017	(1996) Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
ASTM D 4253	(1993; R 1996) Maximum Index Density and Unit Weight of Soils Using a Vibratory Table
ASTM D 4254	(1991; R 1996) Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density
ASTM D 4318	(1998) Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM D 4643	(1993) Determination of Water (Moisture) Content of Soil by the Microwave Oven Method
ASTM D 5195	(1991; R 1996) Density of Soil and Rock In-Place Below the Surface by Nuclear Methods

ENGINEERING MANUALS (EM)

EM 385-1-1	(1996) U.S. Army Corps of Engineers Safety and Health Requirements Manual
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1.3 SUBMITTALS

Government approval is required for all submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-08 Statements

Shoring, Sheet piling, and Bracing; GA.

Submit a detailed shoring, sheet piling and bracing plan 45 days prior to the beginning of any excavation so supported. The plan for shoring, sheet piling and bracing shall be prepared and certified by licensed professional engineer. The plan shall include drawings and design computations of the proposed shoring, sheet piling, and bracing, and documentation, showing details of the coordination and approval of shoring, sheet piling, and bracing by the applicable parties. Approval of the detailed plan shall be obtained from the Contracting Officer's Representative (COR) prior to starting the work. If necessary, the plan shall be modified as required to meet field conditions, and the modifications shall be approved prior to use.

Excavation; GA.

Submit a written excavation plan 45 days prior to the beginning of any excavation. Approval of the detailed plan shall be obtained from the Contracting Officer prior to starting the work. If necessary, the plan shall be modified as required to meet field conditions, and the modifications shall be approved prior to use. As a minimum, the plan shall contain, the following:

- a. Proposed methods for preventing interference with, or damage to, existing underground or overhead utility lines, trees designated to remain and other man-made facilities or natural features designated to remain within or adjacent to the construction rights-of-way.
- b. Provision for coordinating the work with other Contractors working in the construction rights-of-way or on facilities crossing or adjacent to this work.
- c. The proposed methods for controlling surface and ground water in the borrow areas and required excavations.
- d. Stockpiling plan for embankment material before it is transported to the project site showing locations, stockpile heights, slopes, limits, and drainage around the stockpile areas.
- e. A complete listing of equipment used for excavation and to transport the excavated material.
- f. The Contractor's proposed sequence of work for excavating the borrow areas with plan and cross sectional views showing starting and final work locations and clearing, grubbing and stripping limits.
- g. The Contractor's proposed road pattern, and plan for implementing dust control measures.

Borrow Areas; GA.

Submit a written statement to the COR not later than 5 days after receipt of Notice to Proceed indicating the Contractor's intention of fill sources to be used within this project and shall address required excavations as well as all other sources of fill identified.

Plan of Operations; GA.

Fifteen (15) days prior to commencement of haul road construction or placing embankment and backfill which ever is earlier, the contractor shall submit for approval a Plan of Operations for accomplishing all operations and for the location and construction of haul roads, as described herein. Approval of the detailed plan shall be obtained from the COR prior to starting the work.

Testing Laboratory; GA.

Approval of testing facilities shall be based on compliance with ASTM E548,, and no work requiring testing will be permitted until the facilities have been inspected and approved by the COR.

Embankment and Backfill Materials; GA.

At least 5 days prior to placement of any material, the Contractor shall submit to the COR the results of all required testing necessary to classify the material and necessary for determining if placement is in compliance with the requirements herein.

Nuclear Density Testing Equipment Operator; GA.

Nuclear density testing equipment shall be used in accordance with ASTM D 2922 and ASTM D 3017. In addition, the following condition shall apply:

a. Prior to using the nuclear density testing equipment on the site, the Contractor shall submit to the Contracting Officer a certification that the operator has completed a training course approved by the nuclear density testing equipment manufacturer.

b. The nuclear density testing equipment shall be capable of extending a probe a minimum of 12 inches down into a hole.

SD-09 Reports

Survey Records; GA.

Submit a copy of the records of each compliance survey the next work day following the survey.

SD-18 Records

Test Results; GA.

Unless otherwise noted, test results shall be furnished the COR within 24 hours of making the test.

SD-13 Certificates

Inspection and Test Results,; GA-RE.

Inspections and test results shall be certified by a registered Professional Civil Engineer. These certifications shall state that the tests and observations were performed by or under the direct supervision of the Engineer and that the results are representative of the materials or conditions being certified by the tests.

1.4 ACCESS, HAUL ROADS, ROUTING, AND STAGING

The Contractor shall refer to Section, SPECIAL SCHEDULING for construction site access and staging limits. In general and as a minimum, the Contractor shall be required to maintain the access, haul roads (permanent and temporary), routing, and staging areas to prevent dust, rutting, interference with normal traffic flow, litter, and general damage or deterioration. Where a new or existing levee needs to be traversed, the Contractor is referred to Section, SPECIAL SCHEDULING, paragraphs, "Existing Levee" and "Tie-Back Levees". If levee breaching is not approved, then the Contractor shall construct ramps over the levee as necessary such that the levee section is maintained and not reduced.

1.4.1 Temporary Haul Roads

Temporary haul roads shall be limited to within the project right-of-way as shown on the plans. The Contractor shall include as part of the general plan of operations submittal, the layout and sequencing of the temporary haul roads. Temporary haul roads shall be detailed and constructed according to intended use and shall be maintained in good condition throughout the duration of the construction contract or until the point of construction where the use is no longer required. Temporary haul roads shall not hinder surface run-off or ditch, stream, or river discharges. At the completion of the temporary haul road use, the haul road shall be removed and the area restored to its preconstruction condition or its intended construction condition as required by this construction contract. Temporary haul roads shall not be considered a separate pay item.

1.4.2 Permanent Roads Used as Haul Roads

Permanent roads used as haul roads shall be maintained throughout the duration of use and shall be restored to the pre-construction condition or the intended construction condition.

1.5 MAPPING AND FIELD SURVEYS

Topographic mapping is as indicated on the plan sheets. The Contractor is directed to applicable Plan Sheet for mapping standards by area. Field surveys shall be completed as necessary and shall use the vertical and horizontal control identified within these construction documents.

1.5.1 Layout of Work

The Contractor shall lay out the work as indicated within these construction documents.

1.5.2 Surveys for Quantities

The Contractor shall complete surveys for the purpose of quantifying placed material or excavated materials per the pay items. Surveys shall also be completed to verify complete work to the lines, grades, and requirements specified. Levee overbuilds have been included for anticipated settlement.

The Contractor shall plan operations to complete the surveys prior to settlement occurring to the degree of impacting survey results. The survey layout shall be as approved by the COR. Quantities shall be calculated per the average end area method. If the Contractor elects to utilize settlement devices to supplement field surveys, the Contractor shall provide a detailed submittal for COR review, comment, approval, and/or disapproval and shall address the technique, layout, detail drawings, the sequence of effort. There will be no payment for settlement devices.

1.5.3 Surveys for Hillside Borrow Operations

In the event the Contractor elects to use hillside borrow, the Contractor shall complete field surveys satisfactorily to allow quantification of excavated hillside. All breaks and site features shall be surveyed. Following the initial surveys, field surveys shall be completed at the end of each month that borrow occurs to provide intermediate quantities. Prior to conducting a field survey, the Contractor shall provide seven working days notice to the COR. Surveys may be witnessed by the property owner, levee sponsor, and COR. Survey procedure and layout shall be coordinated and agreed to by the COR.

1.6 SOURCES OF FILL MATERIAL

1.6.1 Material Source Usage

A detailed plan of operations shall be submitted for COR review and approval addressing all aspects of material sources to include borrow operations, required excavations, and offsite sources. Material sources usage shall be planned to optimize available material types and ensure sufficient material for each of the defined fill zones. Proposed material usage and distribution shall be included within the plan of operations' submittal. Borrow activities shall not begin until the submittal has been approved by the COR. In general, sources of fill material have been identified for this project and include required excavations, hillside borrow area, and offsite sources. Required excavations and hillside borrow area are sources of impervious and random material. It is anticipated the Contractor will have to locate an offsite source to provide drainage material. Since the same material sources serve as sources of both impervious and random material, the Contractor shall plan extractions, classification, and placement operations to ensure sufficient impervious material for the impervious fill zones. The Contractor shall consider use of impervious classified material for random fill zones on a limited basis to supplement other random sources such as the materials encountered that do not classify as impervious material but are acceptable for random fill zones. If the Contractor elects to use impervious classified material for random fill when there is non-impervious material available and as a result there is insufficient impervious material for the impervious fill zones, the Contractor shall supplement as necessary additional impervious material necessary to meet the impervious fill zone quantity. The cost associated with supplementing impervious material shall be at no expense to the Government. The Contractor shall use the required excavation for fill with the exception of unacceptable material. In addition, the Contractor will be limited on the quantity of hillside material obtained for this construction. If the Contractor does not fully utilize all the available sources of fill material such that there is insufficient quantity for construction, the Contractor shall be responsible for supplementing material types. Material types supplemented by the Contractor shall be review and approved by the COR prior to use. The Contractor is referred below to the paragraph, "Alternate Material Sources Proposed by the Contractor".

1.6.2 Alternate Material Sources Proposed by the Contractor

The Contractor may submit for review and approval to the COR alternate material sources to supplement fill from required excavations or from partial use of already approved borrow sources. The COR will make the final determination on approval of alternate borrow source or sources. If the Contractor elects to submit an alternate material source or sources, the Contractor shall first coordinate with the COR to obtain Contractor requirements for addressing within the submittal the engineering properties, scheduling of work, impacts to the levee, proximity to the levee, environmental regulations, and cultural regulations. An incomplete material source submittal will be grounds for disapproval. If the initial submittal is disapproved, the Contractor shall not submit additional alternate material sources and shall utilize sources of fill identified within these construction documents. The Contractor may elect to obtain processed material, such as drainage material, and will be considered acceptable subject to meeting the requirements of the construction documents.

1.6.3 Variability of Borrow and Required Excavation Properties

A plan shall be submitted to the COR for review and approval outlining borrow and required excavation extraction and placement within the appropriate fill zones. As a minimum the plan shall address excavation sequence; excavation during unfavorable seasons; segregation and protection of material types; adjustment of moisture content; additives to alter moisture content; efforts to minimize loss of available fill material; and measures to protect the available borrow and required excavation throughout the fill material extraction process. The Contractor shall review all available soils' information to develop an appreciation of the soil properties and the need for efforts to adjust soil properties to meet placement and compaction requirements. Of special concern are the moisture contents and the Contractor's proposed procedure for adjusting the moisture contents to an acceptable level while not wasting the available fill. The Contractor shall also consider and address subsurface moisture content and water table tendencies associated with an adjacent channel or river and a procedure to allow use of materials impacted by these tendencies. The Contractor shall also be prepared to segregate material types, protect the various material types as necessary, and place within the appropriate fill zones. Provisions for adjusting soil properties are further addressed in Part 3, "Execution" of this section.

1.6.4 Required Excavation

Required excavation to be used for fill within the applicable fill zones includes the existing levee that is not within the random zone and/or landside berm of the new levee; Quindaro Pump Station ponding area excavation; ditch excavation; Line Creek excavation; excess material from excavation for construction purposes; and excess material from the inspection trench.

1.6.5 Hillside Borrow

The hillside borrow is comprised of loess and is located in Riverside, Missouri at Northwood Road and Missouri State Highway 9. The Contractor will be limited to acquiring no more than 900,000 in place required density cubic yards. The material shall be obtained from the two northernmost ridges of the 3 available ridges.

1.7 SUBSURFACE INFORMATION

1.7.1 Available Subsurface Information

Striplogs with select soil laboratory test results are included within the construction plans along with the, "Legend of Logs of Borings". Complete drill and sample logs and laboratory test results may be examined at the Kansas City District Federal Building, Kansas City, Missouri by coordinating with the COR. A minimum of two days advance notice for scheduling purposes shall be provided to the COR.

1.7.2 Use of Subsurface Information

Drill, sample, and test results are an indication of the subsurface condition at the location of the boring and tests. Variations in subsurface condition may exist between boring and test locations. Soil moisture contents and groundwater levels are indication of that information at the time of the measurement, sample extraction, and/or testing. Soil

moisture content and groundwater level may vary with time in response to seasonal precipitation and river stage variations. As a result, moisture contents and groundwater levels at the time of construction may differ from the data shown on the drawings.

1.8 SAMPLES FURNISHED TO THE GOVERNMENT

Upon request from the COR and within 4 hours of the COR request, the Contractor shall furnish samples from material sources, placed fill, ongoing construction, and/or completed construction. The specifics of sample acquisition to include method, conditions, quantity, container, and other requirements will be specified by the COR. Contractor shall perform this service at no cost to the Government.

1.9 EXISTING LEVEE

The Contractor is directed to Section, SPECIAL SCHEDULING for existing levee requirements. The existing levee shall not be stripped of vegetation until immediately prior to excavation or incorporation within the construction.

1.10 DRAINAGE AND DEWATERING

1.10.1 Surficial and Pipe Drainage

The Contractor shall address in their general plan of operations the methods of drainage control. The Contractor shall maintain natural drainage patterns and/or designed drainage patterns. Temporary work, such as haul roads, shall be designed and constructed so as not to induce adverse flooding or backwater from general run-off and pipe, ditch, stream, or river discharge. The Contractor shall complete necessary efforts to divert run-off and pipe, ditch, stream, or river discharge away from excavations, fill areas, and general construction. The Contractor shall monitor and make adjustments as necessary.

1.10.2 Dewatering

Where excavation dewatering is necessary, the Contractor shall submit the dewatering plan for COR review that will include as a minimum the dewatering design and the dewatering system layout.

1.11 PROTECTION OF EXISTING FEATURES AND ONGOING OR COMPLETED CONSTRUCTION

The Contractor shall plan and conduct operations to ensure the protection of existing features and ongoing and completed construction. Damages occurring during the course of this construction contract as a result of the Contractor's actions or negligence shall be repaired by the Contractor at no expense to the Government. Analyses, designs, details associated with the repairs shall be prepared by an approved design firm at no expense to the Government. The Contractor shall submit the designs for COR review and shall not begin work until the design has been approved. In some cases the repair may require an upgrade. If the upgrade is at the request of the Government, then the Contractor shall be responsible for the expense of the design in its entirety including the upgraded features. However, the Government will provide an equitable adjustment in cost to cover the expense of the construction associated with the upgrade.

1.11.1 Notification and Coordination

When work is to be completed on an existing feature, adjacent to an existing feature, or any time work is planned that may impact an existing feature or an area activity, the Contractor shall be responsible for coordinating with impacted parties to prevent complications with disrupting service or activity.

1.11.2 Ongoing and Completed Construction

In general, the Contractor shall complete the necessary efforts to protect ongoing and completed construction. Earth fill and exposed cuts shall be protected from construction activity and general erosion. Damages occurring shall be repaired by the Contractor at not expense to the Government. The Contractor shall be responsible for protecting against general erosion and repair thereof until the cover has been placed and in the instance of vegetative cover, until the vegetation has established to the point that erosion cannot occur.

1.11.3 Public Roads, Accesses, and Appurtenances

The Contractor shall plan and complete the necessary efforts to protect public roads, accesses, and appurtenances from damages associated with this construction project. The Contractor is directed to Clause 60, "Permits and Responsibilities" of the "Construction Contract Clauses". Contractor's activities shall not deter public use of the roads, accesses, and appurtenances. At locations where public roads, accesses, and/or appurtenances are damaged or destroyed because of the work required under this contract, the Contractor shall provide temporary facilities until a permanent repair can be completed and the construction operations adjusted to prevent further damage. Temporary facilities shall be removed by the Contractor when the permanent repair is complete. Load limits on the existing roads and bridges shall be coordinated with the State and local Departments of Transportation, private entities, or appropriate governing entity, and the Contractor shall comply with the load limits or complete approved modifications to allow for increased loads.

1.11.4 Environmental and Cultural

The Contractor is referred to and shall comply with the requirements of Section, ENVIRONMENTAL PROTECTION for CIVIL WORKS.

1.11.5 Blasting and Explosives' Storage

Blasting shall not be allowed for this construction project. Explosives shall not be stored on site for any reason or for any length of time.

1.11.6 Impacts Outside Construction Right of Way

Contractor's work directly or indirectly impacting property not included within the project's construction right of way limits, shall be coordinated with the COR, and proof of Contractor acquired right of way or easements of the impacted real estate or facility shall be provided to the COR 30 days prior to impacting the real estate or facility. Right of way and easement acquisition shall be in accordance with Government practices as directed by the COR.

1.12 PERMITS

For the work within this construction contract the Contractor shall be responsible for coordinating and obtaining all permits required by Federal,

state, and local entities other than those identified as already obtained by the Government. The Contractor is referred to Section, "Construction Contract Clauses", Paragraph, "Permits and Responsibilities" and to Section, "Special Scheduling", Paragraph, "Permits".

PART 2 PRODUCTS

2.1 FILL MATERIALS

In general satisfactory materials for the respective fill zones shall consist of those material types defined hereinafter. Random material for the landward berms shall be further defined as material as pervious or more pervious than the soil it is being placed upon. Stabilizing agents, when approved by the COR, shall be considered acceptable material only for the purpose as approved by the COR. Material types defined hereinafter shall be placed in the appropriate fill zones as indicated on the plan sheets and herein these specifications. Unsatisfactory materials for the respective fill zones that do not meet the material types' requirements as defined shall be disposed offsite by the Contractor.

2.1.1 Impervious Material

Impervious material shall consist of fine-grained materials of low permeability consisting of clays, silty clays, and/or silts. Impervious material shall be free of crushed rock, debris, plant growth, roots, and humus. The particle size of impervious material shall be such that a minimum of 50 percent of the soil particles pass a U.S. Standard No. 200 sieve. Acceptable impervious material will be CL, CH, and/or ML as classified in accordance with ASTM D 2487.

2.1.2 Pervious Material

Pervious material shall consist of free draining sand, gravelly sand, sandy gravel, and/or gravel. Pervious material shall be sound durable particles and shall be free of plant growth, roots, humus, debris, and deleterious substances. The particle size of pervious material shall be such that not more than 5 percent of the materials pass the U.S. Standard No. 200 sieve as determined with a washed gradation test. Acceptable pervious material will be SW, SP, GW, and/or GP as classified in accordance with ASTM D 2487.

2.1.3 Drainage Material

Drainage material to facilitate seepage adjacent pipes and structures shall consist of free draining fine to medium sand. Drainage material shall be sound durable particles and shall be free of plant growth, roots, humus, debris, and deleterious substances. The particle size shall be such that 100 percent of the materials passes the U.S. Standard No. 10 sieve and not more than 5 percent of the materials pass the U.S. Standard No. 200 sieve as determined with a washed gradation test. Acceptable pervious material is SP as classified in accordance with ASTM D 2487.

2.1.4 Random Material

Random material shall consist of, as defined hereinbefore, impervious material, pervious material, drainage material, or any combination thereof.

2.1.5 Topsoil Material

In general, topsoil material shall be material organic in nature and

capable of sustaining the specified vegetative growth. Topsoil material shall be the material stripped in preparation of the fill, excavation, or general construction. Stripped material is addressed within Section, CLEARING, GRUBBING, and STRIPPING. Topsoil from offsite sources, proposed by the Contractor and approved by the COR, shall be supplemented as necessary when there is insufficient acceptable on-site sources. Topsoil material shall be free from clay lumps, weeds, litter, brush, matted roots, toxic substances, or any material harmful to plant growth or which would hinder grading, planting, operation, or maintenance operations. Topsoil material shall not contain more than 5 percent by volume of stones or other such objects larger than 1 inch in any dimension. Topsoil material shall be such that a minimum of 50 percent of the soil particles pass a U.S. Standard No. 200 sieve.

2.1.6 Aggregate Surfacing

Aggregate surfacing shall conform to Section, "Aggregate Surface Course".

2.1.7 Riprap

Riprap shall conform to Section, STONE PROTECTION.

2.1.8 Bedding

Bedding shall conform to Section, STONE PROTECTION.

PART 3 EXECUTION

3.1 GENERAL

All work shall be in compliance with the requirements of the construction documents including approved submittals.

3.1.1 Dewatering and Run-off Control

Where dewatering and/or run-off control is necessary, the Contractor shall submit all design and plans for COR review. Surface and groundwater control shall be accomplished as necessary in coordination with the required excavation and embankment construction. Run-off control shall also include control of discharges from pipes either currently discharging or discharging as a result of being severed. Surface water and/or groundwater control may necessitate the use of temporary diversion ditches, cofferdams, bypass systems, and/or pumping from wells, well points, and/or sumps.

3.1.2 SHORING, SHEETING, AND BRACING

Where excavation or fill support is necessary to support earth, protect adjacent features, or maintain worker safety, the support system shall be designed in accordance with Federal levee criteria and submitted for COR approval. Reference Section, SPECIAL SCHEDULING for Federal levee criteria. Design shall be completed by a registered professional engineer with experience in this kind of work. In addition to Federal levee criteria, the design shall be in compliance with EM 385-1-1. Shoring, sheeting and bracing shall not be used in lieu of the required excavation slopes where there is sufficient space for cut back slopes. Unless otherwise directed, the design and submittal shall also address removal of the excavation or fill support. With the exception noted above, all shoring, sheeting and bracing shall be removed as embankment and backfill

operations progress and the void filled by a COR approved method.

3.1.3 Freeboard Gages

Freeboard gages shall be constructed per the schedule and to the details included within the plan sheets. Earthwork shall follow the detail and note requirements on the plan sheets.

3.2 REQUIRED EXCAVATION AS A SOURCE OF FILL AND BORROW OPERATIONS

Sources of fill material as pertains to borrow operations are identified in Part 1, "General" of this Section. Excavation for borrow operations shall not be considered a separate pay item. Borrow operations shall be completed to the lines, grades, and requirements in accordance with the construction documents and approved submittals. Required excavation as a source of fill and borrow approved submittals shall be altered as necessary to meet conditions encountered on site as the work progresses. Submittal changes shall first be approved by the COR prior to implementing the changes. Excavation shall not occur until utilities have been located.

3.2.1 Hillside Borrow

For the most part hillside borrow has been cleared, grubbed, and stripped. The Contractor may have to complete some minor stripping prior to excavation of material. Excavation shall be completed such that the entire two northernmost ridges of the three available are excavated maintaining a relatively flat surface with only a slight slope for drainage. Drainage shall be in the direction of natural slope and where erosion structures are in place. Existing erosion structures shall be maintained by the Contractor and any necessary additional erosion structures shall be constructed and maintained by the Contractor. The Contractor shall coordinate with the COR as to the procedure, sequence, and excavation configuration at the perimeter of the two northernmost ridges. At the completion of borrow excavation, the site shall be left in a stable state with all necessary erosion structures left in-place.

3.2.2 Clearing, Grubbing, and Stripping

Clearing, grubbing, and stripping shall be in accordance with the Section, CLEARING, GRUBBING, and STRIPPING. The Contractor is directed to the paragraph referencing stripping and use as topsoil.

3.2.3 Variability of Material Properties

The Contractor shall review all available soil information to develop an appreciation of the material variability and the necessity to adjust soil properties especially with respect to the material types and high moisture contents. Variable material types shall require classification, segregation, stockpile, and placement within the appropriate fill zone. High moisture contents shall require the Contractor to complete efforts to adjust the moisture contents to within an acceptable range. In addition, the hillside borrow area is a loess material and will be sensitive to wetting. Compaction curves for the loess may demonstrate a narrow band to achieve compaction and therefore necessitating the need for tight moisture control requirements. The Contractor shall submit a detailed plan to the COR for review of how the observations identified above as well as other issues associated with material acquisition and placement will be addressed during construction. The plan shall propose procedures that minimize wasting of material.

3.2.3.1 Moisture Content Adjustment--General

The Contractor shall develop a plan for adjusting moisture contents of the available fill material to achieve the proper placement and compaction. Pervious material shall be 100 percent saturated during placement and compaction. Moisture contents for impervious material may require air drying or additives for moisture content reduction or sprinkling and mixing to increase the moisture content. Contractor may propose alternative methods to adjust moisture contents. The submittal shall include in detail the planned procedures. Adjustment of moisture content shall not be an added expense to the Government.

3.2.3.2 Moisture Content Adjustment--Air Dry

The Contractor may reduce the moisture content by staging operations to allow spreading of material and disking the soil to expose it to air and sun. The submittal shall address such tasks as efforts to acquire the wet material from the source, source sequencing, location of spreading, procedure to avoid crusting of the spread soil or exposed source surface, plan to avoid introduction of moisture from rainfall, continuous aeration, seasonal complications, and transfer of material to the fill zone. The submittal shall also address in detail staging, equipment, and anticipated results. The excavation of wet material from material sources shall be limited to those techniques that do not create an adverse condition in the excavation area, such as would be the case if equipment became bogged down within the excavation area or if the excavation area condition between successive excavations did not promote surface runoff.

3.2.3.3 Moisture Content Adjustment--Admixtures

The Contractor may reduce the moisture content by mixing additives within the wet soil. The submittal shall address in detail as a minimum the procedure, equipment, mixture, and case studies where used before (under similar circumstances). Applicable requirements considered within the air dry option shall also be included within this submittal. The use of fly ash or other drying agents, approved by the COR, may be proposed by the Contractor. The submittal shall also include moisture-density curves developed for the material types and admixture percentage. The moisture-density curve for the fill with the admixture (drying agent) shall be used to establish the maximum dry density and optimum moisture content for the fill type with the drying agent incorporated. Adjustments in the drying agent will constitute a different fill material type and will be subjected to the required testing.

3.2.4 Frozen Material

Frozen material shall be considered unacceptable for fill material. Frozen material shall either be removed and used at a later date when thawed and the moisture content sufficiently adjusted or shall be thawed and the moisture content adjusted to within the acceptable range prior to use as fill.

3.3 EXCAVATION OPERATIONS

Excavation shall consist of removal to the lines and grades shown on the plan sheets and as directed herein and the handling to include stockpiling, loading, hauling, and/or placement as required. Excavations shall be

maintained free of debris of any sort or deposited material. Excavations shall be protected from surface runoff. Excavation drainage and dewatering shall be coordinated as required by these construction documents to include approved submittals. Excavation shall not be initiated until utilities have been cleared.

3.3.1 Clearing, Grubbing, and Stripping

Clearing, grubbing, and stripping shall conform to Section, CLEARING, GRUBBING, and STRIPPING. Disposition of cleared, grubbed, and stripped material shall be in accordance with the requirements of these construction documents. Where disposition is not provided for, the Contractor shall be responsible for proper disposition. The Contractor is directed to the paragraph below providing an option for clearing and grubbing disposition.

3.3.2 Required Excavations

Material from required excavation available for fill shall be placed and compacted within the appropriate fill zone per the requirements for placement. The use of the existing levee is addressed within Section, SPECIAL SCHEDULING.

3.3.3 Quindaro Pump Station Ponding Area

3.3.3.1 Ponding Excavation

The Quindaro Pump Station ponding area shall be excavated to the lines, grades, and elevations indicated within the drawings. The excavated material shall be used as fill in the appropriate fill zones identified for this construction contract.

3.3.3.2 Ponding Area Over-Excavation

The Contractor may over-excavate the ponding area for the purpose of obtaining additional fill material or for creating a dump site to dispose construction debris that is not considered hazardous and toxic; and cleared and grubbed material that is not considered hazard and toxic. Regardless of the material disposed, it shall not be disposed in the base of the over-excavation unless the disposition in this matter meets all local, state, and Federal requirements. Disposed material placed at the base of the over-excavated ponding area shall be left in a stable state and approximate the grades shown at the base of the ponding excavation. Over-excavated material is the responsibility of the Contractor to either place in the appropriate fill zones or dispose in an approved manner. The over-excavation slopes shall continue with the slopes of the ponding excavation, however, a bench equal in width to the over-excavation height shall be maintained around the perimeter of the ponding area and at the elevation of the ponding area base as shown in the drawings. The bench shall be slightly sloped to drain towards the center of the ponding area. Disposing of material within the over-excavation shall not rise to an elevation greater than the ponding area bottom elevation shown in the drawings. If the Contractor elects to over-excavate the ponding area, a detailed plan shall be developed to include drawings, details, and procedure for the work demonstrating a methodical and stable excavation and filling.

3.3.4 Inspection Trench

The inspection trench shown within the plan sheets is a required

excavation. The inspection trench shall be required throughout the length of the levee and shall be excavated to the lines and grades shown on the drawings. Prior to beginning work, the Contractor shall submit a plan of operations addressing trench excavation layout, staged limits, sequencing, methods of maintaining a dry excavation, and backfill operations. A coordination plan for other operations such as layout of utility and other subsurface features' locations, procedures for excavating, discovering, and documenting unknown utilities or subsurface features, and segregation of excavation and backfill plan shall be included. Work shall not begin until the plan of operations has been approved by the Contracting Officer. The inspection trench shall be excavated in such a fashion as to prevent damage to utilities and other subsurface features. Excavated materials shall be selectively separated by material classification and protected. Once the inspection trench has been inspected by the Contractor and the Contracting Officer, it shall be backfilled with impervious material in accordance with the requirements herein. Material excavated that is not classified as impervious shall be utilized in construction within the appropriate zone. Excavated materials and items that are unacceptable for re-use on this project shall be the responsibility of the Contractor and removed from the site.

3.3.5 Excavation for Structures and Pipes

Excavations for structures shall conform to the dimensions and elevations indicated for each structure and footing, except as specified hereinafter, and shall include trenching for utility and foundation drainage systems. Excavations for structures shall conform to SECTION, EXCAVATION, TRENCHING, BACKFILLING FOR UTILITIES SYSTEMS, AND STRUCTURES. Excavation shall extend a sufficient distance from walls and footings to allow for placing and removal of forms. Satisfactory material removed below the depths indicated without specific direction of the Contracting Officer shall be replaced at no additional cost to the Government and filled in accordance with the requirements herein. Over excavation below required invert elevations or bottoms of footings shall be backfilled with satisfactory material compacted to the density of the surrounding undisturbed material at no additional cost to the Government. No footings shall be constructed on unsatisfactory material as determined by the COR. Excessively wet and/or soft material in subgrades resulting from water ponding in footing excavations shall be removed and replaced with satisfactory material compacted to the density of the surrounding undisturbed material.

3.3.6 Excavations for Relocations

In general excavations for relocations shall conform to Sections, EXCAVATION, TRENCHING, BACKFILLING for UTILITIES SYSTEMS, and STRUCTURES and SPECIAL SCHEDULING and as required herein these specifications and plan sheets. Pipe placement shall be completed such that the fill is placed to an elevation and then shaped for the pipe diameter such that 60% of the horizontal pipe diameter is bedded into the shaped fill. The practice may be labor intensive especially when occurring in impervious materials. The Contractor shall demonstrate satisfactory completion. Shaped fill and pipe placement shall be inspected by the COR prior to continued backfill operations. Additional shaping shall be required where irregularities occur such as pipe joints and connections.

3.3.7 Excavation for Bedding and Riprap

Excavations for bedding and riprap shall be completed to the layout, lines, and grades shown in the plan sheets.

3.3.8 Excavation for Ditching

Excavation for drainage ditches shall be to the layout, lines, and grades shown in the plan sheets or as directed herein.

3.3.9 Excavation Slopes and Surcharges

Excavation slopes shall be to the grades shown on the plan sheets or as directed herein. Under no circumstances, temporary or permanent, shall the slopes be steeper than the slopes required. Some excavations shall require the Contractor to construct a bench within the slope. The Contractor shall not surcharge the excavation with excavated or stockpiled material, construction equipment, or general loading. Slides or other adverse consequences caused by failure of the Contractor to comply or in general perform operations in a reasonable manner shall be considered the responsibility of the Contractor and repaired by the Contractor as approved by the COR at no additional expense to the Government. If the slide or other adverse consequence is due to no fault of the Contractor, the repair shall be completed as approved by the COR and an equitable adjustment in the contract price will be made for the repair in accordance with the Construction Contract Clause, "Changes".

3.3.10 Over Excavations

3.3.10.1 Over Excavations Outside the Limits of the Levee and Berm Foundation

Over excavation outside the limits of the foundation of the levee and/or berm (or structure or pipe within the levee alignment) shall be backfilled to grade with similar materials or a COR approved alternate material and compacted to a density of at least that of the surrounding undisturbed material or if an alternate material is approved, to the density required for that material type.

3.3.10.2 Over Excavations Within the Limits of the Levee and Berm Foundation

Over excavation within the limits of the foundation of the levee and/or berm (or structure or pipe within the levee alignment) shall be backfilled to grade with impervious material in accordance with the compaction requirements herein.

3.3.11 Excavation Tolerances

A tolerance of 6 inches above or below the prescribed grade will be allowed in the excavation for ditches, inspection trenches, excavations for bedding and riprap. Excavation tolerances shall not be allowed where excavation is for a structure or pipe.

3.3.12 Stockpiles for Excavated Material

Where excavated material is to be used for fill of the construction of this project, the Contractor shall either place and compact as the material is being excavated or stockpile the material until ready for use. Stockpiled material shall be placed such that any part of the stockpile is no closer to the excavation than a distance equal to the depth of the excavation. Stockpiled material placed the minimum distance from the excavation shall not be higher than the adjacent excavation depth and shall maintain the slope of the excavation. The slope of stockpiled material placed a stable

distance from the excavation as approved by the COR shall be no steeper than that what is allowed in the EM 385-1-1. Stockpiles shall be protected from contamination of differing materials, natural occurrences, and general construction activities.

3.4 FILL OPERATIONS

In general, fill operations shall conform to the requirements herein these construction documents and approved submittals. The methodology shall primarily be a procedural specification with specific material properties maintained within a specified range or limit. However, specified testing shall be required to verify the specified ranges or limits are met and to verify adequacy of the procedure. If the specified ranges and limits are met and the procedure doesn't deliver the defined compaction results, then an adjustment in the procedure may be specified and an equitable adjustment made in the price to the Contractor or in lieu of this, the COR may adjust the compaction values. If the specified ranges and limits and/or procedure are not met, then the Contractor shall adjust the operations for compliance and the fill reworked at no additional cost to the Government.

3.4.1 Limits of Fill Operations

Fill shall be placed to the lines and grades and within the appropriate fill zone as indicated within the plans and as stated herein this section. Only approved materials as defined herein shall be placed in the appropriate fill zones. Topsoil shall be placed within the fill lines indicated on the plan sheets per the requirements herein. Unsatisfactory materials shall be the responsibility of the Contractor for disposition. The Contractor shall place fill in such a manner as to prevent mixing of material types especially at the fill zones' interfaces.

3.4.2 Surface Preparation for Fill Placement

Clearing, grubbing, stripping, and/or general excavation shall be completed as required prior to any fill operations. Fill shall not be placed on the embankment foundation until the area to receive the fill has been inspected and approved by the COR. Surfaces subjected to fill to include prepared ground surface and the previous placed lift shall be thoroughly scarified to a depth of 3 inches. Scarified surfaces compacted prior to placement of the subsequent lift shall be re-scarified. Fill shall be placed in layers and compacted in accordance with the provisions for the specific material type required herein. Where necessary the moisture content shall be adjusted for the scarified soil or the fill to be placed. Surfaces shall be graded to drain.

3.4.2.1 Proof Rolling and Grubbed Areas

Once a site is cleared, grubbed, stripped, and/or excavated, the site shall be proof rolled to locate loose, saturated, or soft zones. Loose and soft zones shall be removed and disposed. Cuts such as grubbed areas or topography that is abrupt with steepened sides shall be excavated to flatten the steepened sides. Surfaces subjected to fill shall be thoroughly scarified prior to placing fill.

3.4.2.2 Removal of Unsatisfactory Materials

Prior to placement of fill, materials within the surface to receive fill that do not meet the material requirements as specified herein or have been subjected to conditions such as saturating rain or freeze conditions, shall

be removed prior to placement of fill.

3.4.2.3 Benching

When fill is to be placed against an embankment such as the existing levee or placed fill, the Contractor shall bench into the embankment to facilitate fill placement. The vertical face of the bench shall be approximately the compacted lift thickness of the adjacent fill.

3.4.3 Placement of Fill

In general, placement of fill shall be in accordance with the requirements of the specifications and to the lines and grades shown on the drawings. Where vegetative cover is scheduled, topsoil shall be placed within the limits of the lines and grades of the plan sheets but not to exceed the specified topsoil fill thickness indicated hereinafter. The Contractor shall note zones call outs for a specific material type shall have topsoil within the finish fill lines where vegetative cover is scheduled.

3.4.3.1 LEVEE FILL VARIATION

In general, when varying approved material types are placed within a levee embankment fill zone, the fill shall be placed as a spectrum with the least pervious at the riverward extent of the fill zone and the most pervious at the landward extent of the fill zone. Placement practices throughout each fill zone of the levee shall be such that the embankment will be free from lenses, pockets, streaks, and layers of material differing substantially in texture, gradation, or classification from surrounding material of the same material type. If within the same material type lenses, pockets, streaks, or layers are encountered, the Contractor shall spread and mix the materials by a COR approved method in order to form a blend of the materials.

3.4.3.2 Fill Tolerances

Fill areas shall be constructed to the grades, lines, and cross sections shown on the plan sheets and as directed herein. At all points, a tolerance of 4 inches above or below the prescribed fill elevation will be permitted provided the grade prevents ponding on the embankment or fill and there are no humps, depressions, or abrupt changes in grade other than those indicated in the plan sheet details. Fill tolerances shall not be allowed where fill is required to support a structure or pipe.

3.4.3.3 Impervious Material

Impervious material to be placed in an impervious fill zone shall be placed and spread in a layer not more than an 8 inch loose lift thickness, except the loose lift thickness shall be reduced to 6 inches when within 4 feet of a structure or pipe or when placing within an area is inaccessible to large equipment. To the extent possible, layers should encompass the entire impervious fill zone section and should be carried substantially horizontal and parallel to the levee centerline with slight grade to provide satisfactory drainage during construction.

3.4.3.4 Pervious Material

Pervious material to be placed in a pervious fill zone shall be placed and spread in a layer not more than an 8 inch loose lift thickness, except the loose lift thickness shall be reduced to 6 inches when within 4 feet of a

structure or pipe or when placing within an area inaccessible to large equipment. The landside underseepage berm shall be comprised of random fill and topsoil as required herein these construction documents. Pervious material to be placed within the pervious fill limits of the landside underseepage berm, may be placed in a 12 inch loose lift thickness. Sequencing of work shall provide for placement of the required lift thickness throughout the limits of the fill section and provide for lift thickness complete saturation while at the same time allow for drainage with time. Layers should be carried substantially horizontal and parallel to the levee centerline with sufficient features to facilitate drainage during construction without violating the levee section requirements.

3.4.3.5 Drainage Material

Drainage material to be placed in the fill zone adjacent to a pipe or structure to facilitate controlled seepage, shall be placed and spread in a layer not more than a 6 inch loose lift thickness. Drainage material shall be placed to ensure complete placement and compaction below, adjacent, and above the pipe or structure.

3.4.3.6 Random Material

Random material to be placed in a random fill zone shall be placed in accordance to the material the random is comprised of--impervious or pervious.

3.4.3.7 Topsoil Material

Topsoil material to be placed within the outer face of the appropriate fill surface and shall be placed as follows: fill zones comprised of pervious material shall have 12 inches of topsoil placed to the finish grade shown on the plan sheets. Fill zones comprised of impervious material shall have 6 inches of topsoil placed to the finish grade shown on the plan sheets. Topsoil shall only be placed where vegetative cover is scheduled. Topsoil shall not be placed in more than an 8 inch loose lift thickness.

3.4.3.8 Aggregate Surfacing, Bedding Rock, and Riprap

Aggregate surfacing, bedding rock, and riprap shall be placed in accordance with Sections, "Aggregate Surface Courses" and STONE PROTECTION.

3.4.3.9 Fill Placement Adjacent to a Structure or Pipe

Fill shall not be placed on or against concrete less than 7 days after concrete placement or when the concrete is less than 70 percent of the design strength. Placement of fill against structures and pipes shall conform to SECTION, EXCAVATION, TRENCHING, AND BACKFILLING FOR UTILITIES SYSTEMS AND STRUCTURES. Crawler-type tractors, vibratory equipment and other similar compaction equipment shall not be used within 4 feet of any completed or partially completed structure or pipe. Compaction within 4 feet of completed or partially completed structures and pipes shall be accomplished by the use of mechanical hand tampers, vibrating plates, or other approved methods and equipment. The Contractor shall ensure that compaction operations do not damage any existing utility, structure, or pipe. Any damage caused by the Contractor's operation shall be repaired at no additional cost to the Government.

3.4.4 Compaction Requirements

In general, compaction shall be a procedural requirement with testing requirements for verification and field adjustments. In some instances, compaction requirements shall be an end product thus producing a specified minimum density. An example is, required minimum densities specified shall be achieved for compaction below, adjacent, and above a pipe or structure regardless of compaction procedure.

3.4.4.1 Impervious Material Within Levee Slopes Projected

Impervious material placed within the levee embankment slopes projected shall be compacted as required herein. With the specified loose lift thickness and moisture content, each lift shall be compacted with a minimum of 6 complete passes of an approved tamping roller. The rolling shall be completed parallel to the levee centerline, pipe, or structure. Compaction testing shall be completed as required hereinafter and a minimum of 95% of the Standard Proctor maximum dry density shall be achieved. If the minimum compaction is not achieved, placement shall be discontinued until the COR makes a determination. If the dumped impervious material requires breaking up, then the Contractor shall propose a procedure and shall be approved subject to satisfactory demonstration of effectiveness. In areas inaccessible to large construction equipment or below, adjacent, or above a structure or pipe, placement and moisture content shall be as indicated herein these specifications, and compaction shall achieve 95% of the Standard Proctor maximum dry density.

3.4.4.2 Impervious Material Outside Levee Slopes Projected

Impervious material placed outside the levee embankment slopes projected (such as the riverside berm) shall be compacted as required herein. With the specified loose lift thickness and moisture content, each lift shall be compacted with a minimum of 4 complete passes of an approved tamping roller. The rolling shall be completed parallel to the levee centerline, pipe, or structure. Compaction testing shall be completed as required hereinafter and a minimum of 90% of the Standard Proctor maximum dry density should be achieved. If the minimum compaction is not achieved, placement shall be discontinued until the COR makes a determination. If the dumped impervious material requires breaking up, then the Contractor shall propose a procedure and shall be approved subject to satisfactory demonstration of effectiveness. In areas inaccessible to large construction equipment or below, adjacent, or above a structure or pipe, placement and moisture content shall be as indicated herein these specifications, and compaction shall achieve 95% of the Standard Proctor maximum dry density.

3.4.4.3 Pervious Material

Pervious material placed as part of this construction contract shall be compacted as specified herein. With the specified loose thickness and percent saturation, each lift shall be compacted with 4 complete passes of an approved vibratory roller or plate compactor. The roller or plate compactor shall be applied parallel to the levee centerline, pipe, or structure. Compaction testing shall be completed as required hereinafter and a minimum of 50% relative density should be achieved. If the minimum compaction is not achieved, placement shall be discontinued until the COR makes a determination. In areas inaccessible to large construction equipment or zones below, adjacent, or above a structures or pipe, placement and percent saturation shall be as indicated herein these specifications, and compaction shall achieve a minimum of 50% relative density.

3.4.4.4 Random Material

If Random material consists of impervious materials, then compaction shall conform to requirements for impervious material. If random material consists of pervious material, then compaction shall conform to requirements for pervious material.

3.4.4.5 Drainage Material

Drainage material compaction shall comply with the requirements for pervious material.

3.4.4.6 Topsoil Material

Topsoil shall be compacted by one pass over each 8 inch loose lift thickness with a cultipacker, roller, or other approved equipment weighing 100 to 160 pounds per linear foot of roller.

3.4.4.7 Aggregate Surface, Rock Bedding, and Riprap

Placement and compaction requirements, when applicable, for aggregate surfacing, rock bedding, and riprap shall be in accordance with Sections, "Aggregate Surface Courses" and STONE PROTECTION.

3.4.5 Moisture Control

Materials being placed as fill shall be within the moisture content limits for the respective material type. Materials that are not within the specified moisture content limits either before or after compaction shall be reworked and the moisture content adjusted to obtain a moisture content within the specified range. Surfaces to receive fill shall be monitored for moisture content. Whenever the surface to receive fill is either too dry or too wet, the moisture content of the surface shall be appropriately adjusted prior to placing the next fill lift.

3.4.5.1 Impervious Material

The moisture content for impervious material to be placed in a fill zone shall be within the range of 3 percentage points above optimum moisture content to 2 percentage points below optimum moisture content. Moisture content shall be determined per ASTM D 698.

3.4.5.2 Pervious Material

The moisture content for pervious material to be placed in a fill zone shall be fully saturated. The Contractor shall take the measures necessary to assure complete saturation.

3.4.5.3 Random Material

The moisture content for random material to be placed in a fill zone shall be in accordance to the random material per its classification--Impervious or Pervious.

3.4.5.4 Topsoil Material

The moisture content for the topsoil material to be placed shall be such that compactive effort is kept to a minimum yet sufficient to hold the soil together and support vegetative cover.

3.5 EARTHWORK CONSTRUCTION EQUIPMENT

Earthwork construction equipment intended for the tasks identified hereinafter shall comply with the requirements specified.

3.5.1 Compaction Equipment

3.5.1.1 Towed Tamping Rollers

Towed tamping rollers shall be used for compaction of impervious material. Tamping rollers shall consist of a heavy duty double drum unit, with a drum diameter not less than 60 inches, and an individual drum length of not less than 60 inches. The drums shall be capable of being ballasted with water or a combination of sand and water. Each drum shall have staggered feet uniformly spaced over the cylindrical surface such as to provide approximately three tamping feet for each two square feet of drum surface. The tamping feet shall be 7 to 9 inches in clear projection from the cylindrical surface of the roller and shall have a face area of not less than 5 square inches nor more than 7 square inches. The roller shall be equipped with cleaning fingers, so designed and attached as to prevent the accumulation of material between the tamping feet, and these cleaning fingers shall be maintained at their full length throughout the periods of use of the roller. The weight of the roller shall not be less than 3500 pounds per foot of linear drum length weighted, and shall not be more than 2000 pounds per foot of drum length empty. The two drums comprising one roller unit shall be yoked such that they will oscillate when traversing uneven surfaces. The design and operation of the tamping roller shall be subject to the approval of the COR who shall have the right at any time during the prosecution of the work to direct such repairs to the tamping feet, minor alterations in the roller and variations in the weight as may be found necessary to secure optimum compaction of the earth fill materials. The Contractor may be required to add ballast to the roller to the maximum capacity specified by the manufacturer of the roller. The roller shall be drawn by a crawler-type or a rubber-tired tractor at a speed not to exceed 3.5 miles per hour. The use of the rubber-tired tractor shall be discontinued if the tires leave ruts that prevent uniform compaction by the tamping roller. If tamping rollers are used in tandem, not more than two rollers in tandem will be permitted and in such case, one trip of the tandem rollers over any surface will be considered as two passes. When tamping rollers are used in tandem, the tamping foot spacing shall be offset so that the circumferential rows on the rear drums are in line with the mid-point of the circumferential rows on the forward drums.

3.5.1.2 Self-Propelled Tamping Rollers

Self-propelled tamping rollers may be used in lieu of towed tamping rollers provided the foot pressure on the tamping feet of the self-propelled roller are approximately the same as the foot pressure on the towed roller. For self-propelled rollers steered with rubber-tired wheels, the tire pressure shall not exceed 40 pounds per square inch. Self-propelled rollers shall be operated at speeds not exceeding 3.5 miles per hour. The Contracting Officer has the authority to limit or eliminate the use of self-propelled rollers if they are found to cause shearing or laminations of the compacted fill.

3.5.1.3 Vibratory Rollers

Vibratory rollers shall be used for compacting pervious materials in random

fill, drainage fill, and aggregate surfacing. Vibratory rollers shall be equipped with a smooth steel compaction drum and shall be operated at a frequency of vibration during compaction operations between 1100 and 1500 vpm. Vibratory rollers may be either towed or self-propelled and shall have an unsprung drum weight that is a minimum of 60 percent of the rollers' static weight. Towed rollers shall have at least 90 percent of their weight transmitted to the ground through the compaction drum when the roller is standing in a level position hitched to the towing vehicle. Rollers for compacting rockfill, sand and gravel fills, or filter and drainage layers shall have a minimum static weight of 20,000 pounds, a minimum dynamic force of 40,000 pounds when operating at 1400 vpm, and an applied force not less than 9,000 pounds per foot of compaction drum length. Rollers for compacting sand and gravel fills or filter and drainage layers shall have a minimum static weight of 8,000 pounds, a minimum dynamic force of 16,000 pounds when operating at 1400 vpm, and an applied force not less than 5,000 pounds nor greater than 9,000 pounds per foot of compaction drum length. The level of amplitude and vibration frequency during compaction will be maintained uniform throughout the embankment zone within which it is operating. Rollers shall be operated at speeds not to exceed 1.5 mph. The equipment manufacturer shall furnish sufficient data, drawings, and computation for verification of the above specifications, and the character and efficiency of this equipment shall be subject to approval by the COR.

3.5.1.4 Hand Operated Power Tampers

In areas where large equipment is not allowed or it is impracticable to use a roller, compaction shall be performed by the use of approved hand operated power tampers. Hand operated power tampers shall be used for compaction impervious materials and shall be capable of compacting material in a confined area. The compactors shall be either an internal combustion or pneumatic activated tamper. Tampers shall have sufficient weight and striking power to produce the specified compaction. The character and efficiency of this equipment shall be subject to the approval of the COR. Where hand operated equipment is used, compaction shall be a performance specification achieving the minimum compaction requirements.

3.5.1.5 Hand Operated Vibratory Plate

In areas where large equipment is not allowed or it is impracticable to use a vibratory roller, compaction shall be performed by the use of an approved hand operated vibratory plate. Hand operated vibratory plates shall be used for compaction of pervious materials and shall be capable of compacting material in a confined area. Hand operated vibratory plates shall utilize the oscillating cam principal and shall deliver an impact of not less than 2000 pounds and be rated to deliver 2000 impulses per minute. The character and efficiency of this equipment shall be subject to the approval of the COR. Where hand operated equipment is used, compaction shall be a performance specification achieving the minimum compaction requirements.

3.5.1.6 Crawler Type Equipment

Crawler type equipment shall only be used for compaction if there is continuous successful demonstration of achieving compaction requirements. Crawler equipment shall weigh not less than 40,000 pounds and shall exert a unit tread pressure of not less than 6 pounds per square inch. Speeds shall not exceed 3.5 miles per hour.

3.5.2 Wetting Equipment

Wetting equipment shall consist of tank trucks, pressure distributors or other equipment designed to apply water uniformly and in controlled quantities and rates to variable surface widths. Wetting equipment approval shall be based on demonstration of satisfactory performance. Wetting equipment types and operations shall not compact or excessively wet the material to receive the moisture and shall not result in standing water within the material to be wetted or areas adjacent the staging or construction areas.

3.5.3 Materials' Manipulation Equipment

Scarifiers, discs, spring-tooth or spike-tooth harrows, spreaders, and other equipment shall be suitable for use in manipulating materials in preparation of use in construction. Equipment shall be subject to approval by the COR and shall be based on demonstration of satisfactory performance. Equipment used for blending materials shall be capable of penetrating the full thickness or capable of processing the full thickness of the material. Satisfactory performance shall be based on consistent complete and thorough processing of the material or materials.

3.5.4 Other Earthwork Equipment

Other Equipment not mentioned such as equipment for earthwork extraction and handling shall be subject to COR approval, and approval shall be based on continued satisfactory performance. When conditions change, equipment changes may be required. The Contractor shall be made aware of conditions specific to a flood plain with a fluctuating river adjacent to the work. The Contractor shall consider operational (or trafficability) problems such as, but not limited to, pumping of water and materials to the surface by moving equipment as well as bogging of equipment in soft, wet ground. Selection and proposal of equipment in the plan of operations shall account for ground conditions associated with floodplains near a fluctuating river.

3.6 MATERIALS' TESTING

In general, the requirements specified herein are the minimum requirements. Additional testing shall be required when there is question on the material or fill placed or change of conditions occurring that may impact the material or placed fill. Additional testing shall be performed by the Contractor at no additional expense to the Government.

3.6.1 Classification Testing

Soil classification tests shall be performed in accordance with ASTM D 2487. One classification test shall be required for each representative type of material to be used as fill and for each material type encountered within a borrow area or required excavation. As prescribed in ASTM D 2487, grain size analyses in accordance with ASTM D 422 and Atterberg limits in accordance with ASTM D 4318 shall be performed on each different type of material to be used and for each borrow area. The Contractor shall perform additional tests at the request of the COR. Soil classification tests shall be performed on foundation material as required to determine the acceptability of the in-situ soils. Additional tests shall be required if noticeable changes in the material are observed.

3.6.2 Impervious Material

In general testing frequency specified is applicable for embankment fill and sources of material. When fill is to be placed below, adjacent, or above a pipe or structure, testing shall be completed for every other lift thickness and a minimum of every 500 feet of fill placement.

3.6.2.1 Moisture-Density Test

The moisture-density relationship for each type of impervious material encountered within each of the borrow areas or required excavations shall be determined in accordance with ASTM D 698. Prior to placing any impervious fill material, a (5) five-point (minimum) compaction test shall be performed on the representative samples of the material to be used as fill. Additional tests shall be required each time a new material is encountered. The moisture-density curves shall be compiled to form a family of curves which will be utilized to estimate optimum properties (maximum dry density and optimum moisture content) to be used with field density test.

3.6.2.2 Moisture Content Test

Determination of moisture content shall be performed in accordance with ASTM D 2216. One moisture content test shall be performed for each 1000 cubic yards of material placed or each lift of material whichever is less. Backfill and fills not meeting the required specifications for moisture content shall be retested after corrective measures have been applied. When conditions exist throughout the placement process such as drying winds or sun or wetting from precipitation, additional testing shall be completed throughout the placement process to ensure proper moisture content. The COR shall determine the frequency of additional testing.

3.6.2.3 In-Place Density Test

Impervious fill in-place density shall be determined in accordance with ASTM D 1556, ASTM D 2167, ASTM D 2922. At least one (1) in-place density test shall be performed on each lift of material or every 1000 cubic yards of completed fill whichever is more frequent with the horizontal locations randomly staggered in the fill. The results of the five-point compaction test and the moisture content test will be utilized to obtain the optimum properties to compare to the results of the in-place density test. Placed fill not meeting the required specifications for in-place density shall be retested after additional compaction has been completed. When the nuclear method is used for in-place density testing according to ASTM D 2922 and ASTM D 3017, the first test and every tenth test thereafter for each material type shall include a sand cone correlation test in accordance with ASTM D 1556. The sand cone test shall be performed at the location of the nuclear test and should sample the same location that the nuclear probe and detector tested, ie as close a distance as possible between the probe and the detector. The sand cone test shall include a nominal 6 inch diameter sand cone, and shall include a minimum wet soil weight of 6 pounds extracted from the hole. Nuclear density testing equipment shall not be used during rain. The density correlations shall be submitted with test results. Each transmittal including density test data shall include a summary of all density correlations for the job prepared on a summary sheet including as a minimum:

- Meter serial number and operators initials.
- Standard Count for each test.
- Material type.
- Probe depth.

Moisture content by each test method and deviation.
Wet density by each test method and the deviation.

3.6.3 Pervious Material

In general testing frequency specified is applicable for embankment fill and sources of material. When fill is to be placed below, adjacent, or above a pipe or structure, testing shall be completed for every other lift thickness and a minimum of every 500 feet of fill placement.

3.6.3.1 Relative Density Test

The Contractor shall complete not less than one relative density test for every 3000 cubic yards of pervious fill type in accordance with ASTM D 4253 and ASTM D 4254.

3.6.3.2 In-Place Relative Density Test

The in-place density of the pervious materials shall be determined in accordance with ASTM D 1556, ASTM D 2167, ASTM D 2922, or ASTM D 5195. The Contractor shall run not less than one (1) field in-place density test on each lift of material or every 2000 cubic yards of completed embankment fill or backfill whichever is less. Horizontal locations shall be randomly staggered in the fill. When nuclear method is used for in-place density testing according to ASTM D 2922 and ASTM D 3017, the first test and every tenth test thereafter for each material type shall include a sand cone correlation test in accordance with ASTM D 1556. The sand cone test shall be performed at the location of the nuclear test and should sample the same location that the nuclear probe and detector tested, ie as close of a distance as possible between the probe and the detector. The sand cone test shall include a nominal 6 inch diameter sand cone, and shall include a minimum wet soil weight of 6 pounds extracted from the hole. The density correlations shall be submitted with test results. Each transmittal including density test data shall include a summary of all density correlations for the job prepared on a summary sheet including as a minimum:

- Meter serial number and operator's initials.
- Standard count for each test.
- Material type.
- Probe depth.
- Moisture content by each test method and the deviation.
- Wet density by each test method and the deviation.

3.7 CONTRACTOR QUALITY CONTROL

Contractor quality control in support of the earthwork shall include all efforts to ensure compliance with these construction documents to include support of Government efforts as part of quality assurance. The Contractor shall immediately report to the COR in writing all conditions identified in the field as a change. The Contractor efforts in support of Contractor earthwork quality control shall include but not be limited to the items indicated hereinafter.

3.7.1 Excavation

The Contractor shall complete all efforts to ensure compliance with the construction documents in support of excavation requirements for required excavation and excavation in support of non-pay items such as borrow areas. Contractor efforts shall include but not be limited to the following:

Maintain records and complete as-built drawings and submit to the COR as required.
 Complete all surveys to ensure excavations to all specified lines and grades within specified tolerances.
 Complete utility location prior to excavations and documenting the utilities as required.
 Use only approved equipment for work and modify as necessary and as approved by the COR.
 Complete segregation of materials to include testing, stockpile, placement, removal offsite and provide for protection of segregated materials.
 Complete operations to ensure protection of excavation and stockpile from run-off and discharges.
 Complete operations to ensure stability of excavation and stockpiled material.

3.7.2 Fill

The Contractor shall complete all efforts to ensure compliance with the construction documents in support of fill operations' requirements for emankment, berms, pipe, and structure backfill. Contractor efforts shall include but not be limited to the following:

Maintain records, test results, and complete as-built drawings and submit to the COR as required.
 Use only approved equipment for work and modify as necessary and as approved by the COR.
 Complete all surveys to include survey control, grade stakes, survey sections to ensure proper project layout and that fill limits are met to include fill zones and overall fill.
 Complete all proper surface preparation to receive fill.

Complete all testing of materials and fill placed to ensure compliance with the contstruction requirements.
 Properly place and compact appropriate materials and protect partially and completed fill operations.

3.7.3 Miscellaneous

The Contractor shall also complete all efforts to ensure compliance with the construction documents in support of all other opertions required such as construction of the free board gages. Contractor shall perform all work in accordance with the construction documents and approved submittals. All necessary surveys shall be completed as well as maintaining all records and complete as-built drawings and submit to the COR as required.

3.7.4 Testing and Reporting

The Contractor shall complete all testing in accordance with the requirements of these construction documents. Testing specified shall be considered the minimum requirement. When there is question of the material or the fill placed or conditions occurring in the field that may impact the material or fill placed properties, the COR may require additional testing, and the Contractor shall complete the additional testing at no additional cost to the Government. As part of quality assurance, the Government may perform testing. The Contractor shall provide the samples for Government testing and when the testing is to be performed in the field, the Contractor shall provide the testing equipment at no additional cost to the

Maintain records and complete as-built drawings and submit to the COR as required.
 Complete all surveys to ensure excavations to all specified lines and grades within specified tolerances.
 Complete utility location prior to excavations and documenting the utilities as required.
 Use only approved equipment for work and modify as necessary and as approved by the COR.
 Complete segregation of materials to include testing, stockpile, placement, removal offsite and provide for protection of segregated materials.
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